Optimal weighted least-squares approximation in high dimension

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We present some results on the stability and accuracy of weighted least-squares methods for approximation in high dimension. The weighted least-squares estimator is constructed starting from pointwise evaluations of the target function at random points. The estimator provides an optimal error under the minimal condition that the number of evaluations be linearly proportional (up to a logarithmic factor) to the dimension of the approximation space, independently of the ambient dimension. Afterwards we discuss the application of these results to adaptive approximation.

Joint work with: Albert Cohen.

References

[1] A. Cohen, G. Migliorati. Optimal weighted least-squares methods. SMAI-JCM, 3:181–203, 2017.